

Honeywell
5000 Brittonfield Parkway
Suite 700
East Syracuse, NY 13057
315 431-4443
315 431-4777 Fax

June 26, 2009

Mr. Richard Mustico, P.E.
Project Manager
Remedial Bureau D
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway – 12th Floor
Albany, New York 12233-7016

RE: Willis Avenue Lakeshore Barrier Wall IRM (Site No.: 734026)
Restoration/Mitigation Design
Village of Solvay, Onondaga County, NY
Order on Consent: Index # D7-0004-01-09

Dear Mr. Mustico:

We have reviewed your comments to the Restoration/Mitigation Design dated May 26, 2009 and have incorporated them into the final design document, provided below. Detailed responses to New York State Department of Environmental Conservation (NYSDEC) comments are provided in Attachment D.

Section 1 Introduction

This Restoration/Mitigation (RM) design has been prepared in accordance with the requirements of the Order on Consent entered into by Honeywell International, Inc. (Honeywell) and the New York State Department of Environmental Conservation (NYSDEC), effective April 16, 2002 for the Willis Ave./Semet Tar Beds Sites IRM (Willis/Semet IRM) and the requirements specified in your comments dated May 26, 2009. The RM design includes plans, methodologies, and schedule for implementation of the restoration/mitigation activities related to the Willis/Semet IRM. A project location map, which identifies the respective restoration/mitigation areas, is provided as Figure A-1.

This design is organized into seven sections and four appendices, as described below:

Section 1 – Introduction

Section 2 – Shoreline Mitigation: Semet Shoreline Area

Section 3 – Upland Habitat Design: Design Section 4

Section 4 – Conceptual Upland Habitat Design: Causeway Area

Section 5 – Erosion Control

531223



Section 6 – Monitoring

Section 7 - Schedule

Attachment A – Drawings

Attachment B – Tables

Attachment C – Schedule

Attachment D – Responses to NYSDEC Comments

A detailed site description and history is available in the *IRM Work Plan for the Willis Ave./Semet Tar Beds Sites IRM* (Parsons, 2003).

Section 2 - Shoreline Mitigation – Semet Shoreline Area

Mitigation of un-restored shoreline will be completed along Onondaga lake outboard of the Semet portion of the Willis/Semet IRM barrier wall. This mitigation will consist of shoreline enhancement, which will include placement of topsoil over the existing riprap embankment and the establishment of a native plant community using upland and shoreline plantings and seeding as shown on Drawing 444843-L001 in Attachment A.

Topsoil will be placed using conventional construction techniques. Once placed, the topsoil will be worked into the void space within the existing rip-rap surface using hand tools or other appropriate means. Once the voids space has been filled, additional topsoil will be spread over the area to a minimum depth of 4 inches. As the topsoil is placed over the existing riprap, it will be graded into the existing slope from the access road to minimize the potential for surface water ponding and facilitate drainage. Once grading is completed, the upland area above elevation 366.0 feet will be seeded with the conservation seed mix, as presented in Table B-1 provided in Attachment B. A wetland seed mix, composed of facultative wetland species, will be used along the shoreline in the area lakeside of the planted tree and shrub row below elevation 366.0 feet, as specified in Table B-2 provided in Attachment B. Mulch will be applied to seeded areas to prevent topsoil erosion prior to seed germination. In addition an interim cover crop, such as grain rye (*Secale cereale*), will be used to minimize the loss of topsoil by erosion while the specified species are established.

The second component of the shoreline enhancement includes the establishment of tree and shrub species along the upland portion of the site. Plantings will be spaced intermittently as indicated on Drawing 444843-L001. The area excavated for the plantings will be advanced to a sufficient depth to remove all of the riprap to the underlying surface before planting. The size of the riprap ranges from approximately 6 to 18 inches with a vertical extent of approximately 18 inches. Once the rip rap has been removed, the excavation will be advanced to a sufficient depth to provide a minimum of 12 inches of planting soil around the root ball while maintaining the proper height with respect to the ground surface. This planting methodology was developed in consultation with

ESF faculty to ensure sufficient growth medium is provided to sustain growth of the selected plant species.

The spacing for tree and shrub species, as indicated on the drawings, has been selected to maintain visibility of the lake while improving habitat along the shoreline. Tree and shrub species considered for use along the shoreline area are specified in Table B-3 in Attachment B. Actual species selected are indicated on the drawings.

In addition to upland plantings, locally sourced willow whips harvested during the dormant season (November – April) will be planted along the shoreline coincident with the upland tree and shrub plantings. As indicated on Drawing 444843-L001, installation of the willow whips will be conducted in a manner similar to the tree and shrub species in that a small area will be excavated to a depth sufficient to remove the riprap. Once the riprap has been removed, the root tip of the whip will be placed at a level consistent with the lake elevation and backfilled in place with topsoil.

The establishment of waterside vegetation will provide shade and leaf litter input that will enhance the fish and benthic macroinvertebrate habitat in the adjacent shallow water areas of Onondaga Lake that will be restored as part of the in-lake remediation work. In addition, the willow whips will provide protective cover and screen the adjacent upland areas for water birds and other organisms using the shoreline.

Section 3 – Upland Habitat Design: Design Section 4

Following completion of the barrier wall construction and lightweight fill placement to the design grades, the upland area behind the barrier wall in the Willis-Semet IRM Design Section 4 area will be restored as indicated on Drawing 444843-L002 in Attachment A. In addition, the top of the barrier wall will be cut down to the final design elevation of 365.0 feet above mean sea level (amsl) (Note: all elevations referenced in this document are in NAVD 88).

It is anticipated that this area will not be required to support dredging operations during the remediation of Onondaga Lake and that following completion; this restored area will not be disturbed. However, it should be noted that if additional area is required to support dredging operations, it may be necessary to disturb this area.

Restoration activities will include amendment of the top 6 inches of light-weight fill with organic material (e.g. addition of compost, mulch, or biosolids), placement of topsoil to a minimum depth of 6 inches, and the establishment of a native plant community using upland and shoreline plantings and seeding as shown on Drawing 444843-L002. The addition of organic material and topsoil, coupled with the relatively shallow groundwater table (approximately 2.5 feet below the design grade) in this area will provide a suitable growth medium to support the proposed plantings.

The tree and shrub species considered for this area are presented in Table B-3. Actual species selected are indicated on the drawings. Following completion of the tree and shrub plantings, the

entire area will be fertilized and seeded with the conservation seed mix for upland areas as specified in Table B-1. Following seeding, mulch will be applied and an interim cover crop, such as grain rye (*Secale cereale*), will be used with the placement of seed mix to minimize the loss of topsoil by erosion while the specified species are established.

Section 4 – Conceptual Upland Habitat Design: Causeway Area

Following completion of final grading and topsoil placement, the Willis area will be fertilized and seeded with the conservation seed mix identified in Table B-1 and applied as indicated on the drawings. Finally, mulch will be applied to the area and a cover crop such as grain rye (*Secale cereale*) to prevent erosion while the specified species are established.

Upon completion of remedial activities for the lake, the Willis area will be restored in a manner consistent with the conceptual design presented in Drawing 444287-L003. The conceptual restoration components include, but are not limited to:

- Cutting the top of the barrier wall to a finished elevation of 365.0 feet amsl;
- Establishment of a vegetated shoreline (including overhanging vegetation) where appropriate;
- Establishment of species consistent with the water regime and growing substrate;
- Amendment of the top 6 inches of lightweight fill with organic material (e.g. addition of compost, mulch, or biosolids); and
- Placement of a minimum of 6 inches of topsoil over the amended light-weight fill to support vegetative growth.

It should be noted that the growing medium identified for use in the Causeway Area in this conceptual design is consistent with the approach for Design Section 4. However, observations and lessons learned from implementation in the Design Section 4 area may result in modifications to this conceptual approach in order to achieve the design objectives.

The species to be established in this area will be selected from Table B-3 with respect to the relative success of species observed in Design Section 4. The final condition of the barrier wall in relation to the lake with the conceptual habitat restoration for SMU2 is illustrated in Figure A-2, provided in Attachment A.

Section 5 – Erosion Control

The restoration/mitigation activities to be conducted at the site will require temporary stormwater controls and erosion prevention measures be implemented. Temporary storm

water/erosion and sediment controls will consist of silt fencing to prevent soil or sediment erosion from the Semet shoreline and Design Section 4 areas, as well as material stockpile areas. Storm water from up gradient locations will be routed away from exposed materials or excavation areas. Storm water contact with exposed material will be minimized to the extent practicable. Erosion control measures will be maintained in the work areas until sufficient vegetative cover has been established.

Section 6 – Monitoring and Maintenance

The monitoring plan presented below was developed based on the existing plan that has been implemented for the LCP OU-1 site. The plan includes the following elements:

Monitoring

Monitoring will include a yearly monitoring event conducted during fall, at or near the same day every year for a minimum of 5 years. Components of the event will include:

- Photographs taken from monitoring stations developed during the first year using the same viewpoint (NW, E, etc.);
- Qualitative vegetation assessment including:
 - Condition of tree and shrub species.
 - Assessment of conservation seed mix species and wetland seed mix species (species present, relative dominance, approximate percent cover);
- Documentation of invasive species (species, location and approximate size of patch); and
- Wildlife usage.

A short letter report will be prepared subsequent to the annual monitoring event that will include the information outlined above and discuss the success of the restoration areas and recommendations to correct deficiencies.

Maintenance

The maintenance program will include the following:

- Maintaining a minimum of 85% of the tree (including willow) and shrub species. If a single species makes up a substantial portion of the failed vegetation a new species will be selected from Table B-3;
- Re-seeding select conservation and wetland seed mix areas where coverage is below 85% as determined during annual monitoring;
- Mowing of the interim cover crop, if required, the following spring after seeding;
- Removal of erosion control structures once plants have become established; and
- Installation of herbivory controls as required ensuring successful establishment of the tree and shrub species.

The time period for the maintenance program will be five years.

ATTACHMENT A
DRAWINGS

Mr. Richard Mustico, P.E.
NYSDEC
June 26, 2009
Page 6 of 10

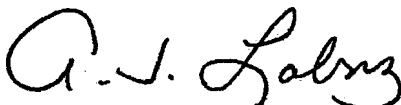
Section 7 – Schedule

A detailed project schedule is presented in Figure C-1 in Attachment C.

If you have any questions, or require additional information, please contact me at (315) 431-4443.

Sincerely,
Honeywell International, Inc.

Sincerely,



Alfred J. Labuz
Remediation Manager
AJL/MBB

Attachments

cc: Argie Cirillo, Esquire	USEPA
Margaret Sheen, Esquire	NYSDEC
Ms. Rebecca Quail	NYSDEC
Mr. Robert Nunes	USEPA, Region II
Mr. Geoffrey Laccetti	NYSDOH, Troy
Mr. Mark Sergott	NYSDOH, Troy
Mr. Gregg Townsend	NYSDEC, Region 7
Joseph Heath	
Mr. Gerry Jamieson	HETF/Onondaga Nation
Ms. Tara M. Blum	NYSDEC, Region 7
Brian D. Israel, Esquire	Arnold & Porter
Mr. John McAuliffe	Honeywell
Mr. William Hague	Honeywell
Mr. Stephen Warren	Parsons
Mr. Michael Broschart	Parsons
Mr. Timothy Johnson	Parsons
Mr. Ryan Davis	QEA

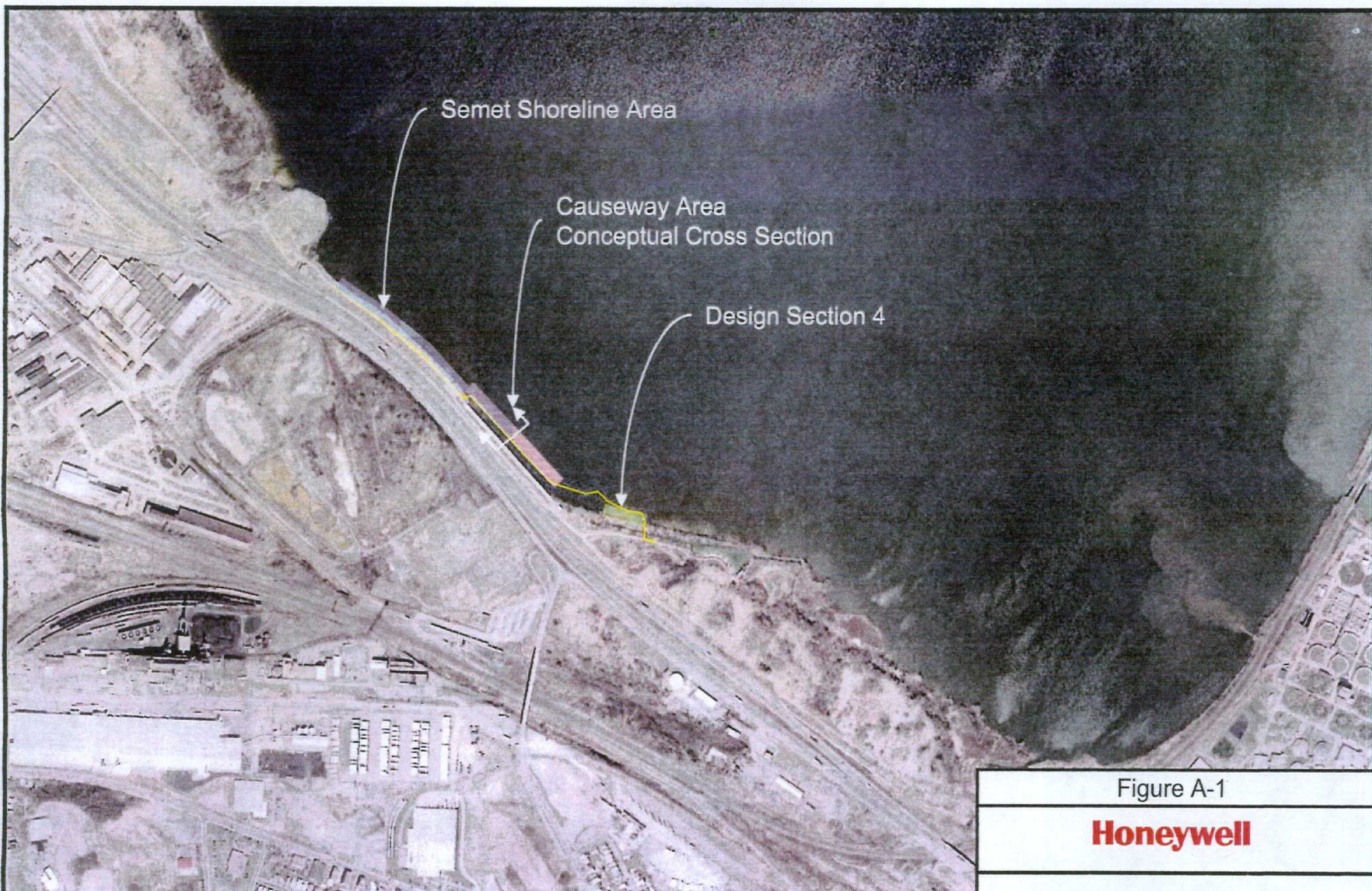


Figure A-1

Honeywell

Project Location Map

PARSONS

290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560

Not to Scale

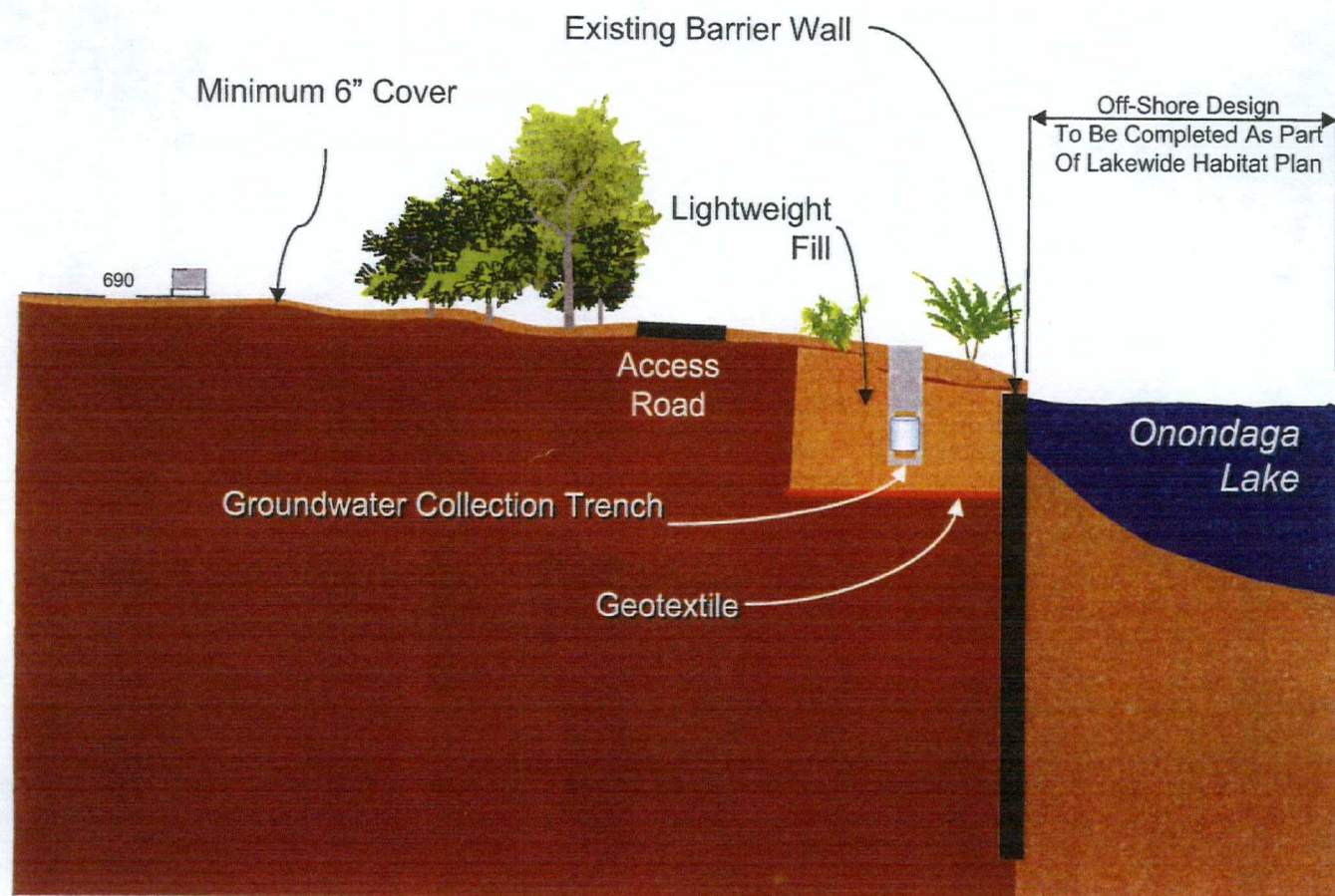


Figure A-2

Honeywell

Conceptual Habitat Restoration
For Causeway Area

PARSONS

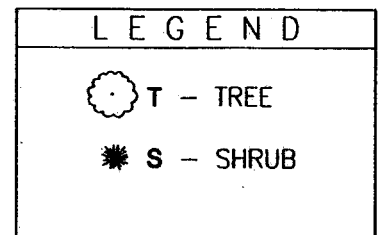
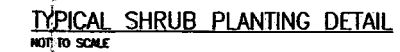
290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560

Not to Scale

1. APPLY FERTILIZER IN ACCORDANCE TO MANUFACTURER'S SUGGESTED RATE. FERTILIZER TO CONTAIN A MINIMUM OF 18% NITROGEN, 24% PHOSPHORIC ACID, AND 6% POTASH.
2. APPLY CONSERVATION SEED MIX IN TABLE 1 UNIFORMLY ON PREPARED SURFACES AT 11 LBS/ACRE. APPLY SEED MIX IN TABLE 2 AT 4 LBS/ACRE. LIGHTLY RAKE OVER OR ROLL SEED INTO THE SURFACE.
3. APPLY MULCH AT A UNIFORM RATE OF 1,500 LBS/ACRE. ANCHOR MULCH WITH TACKIFIER.
4. APPLY SEED MIX IN TABLE 1 ABOVE ELEVATION OF 366 AND SEED IN TABLE 2 BELOW ELEVATION OF 366.
5. REMOVE ALL RIPRAP UNDERLYING TREE AND SHRUB SPECIES BEFORE PLANTING.
6. TREES SHALL HAVE A MAXIMUM DIAMETER OF 3 INCHES.

COMMON NAME	SPECIES	PERCENT BY WGT
'NIAGARA' BIG BLUESTEM	ANDROPOGON GERARDII, 'NIAGARA'	25
CANADA WILD RYE	ELYMUS CANADENSIS	25
INDIANGRASS, PA ECOTYPE	SORGHASTRUM NUTANS, PA ECOTYPE	20
PARTRIDGE PEA	CHAMARCISTA FASCICULATA	10
SHOWY TICK TREFOLI	DESMODIUM CANADENSE	6
OX EYE SUNFLOWER	HELIOPSIS HELIANTHOIDES	5
'SHELTER' SWITCHGRASS	PANICUM VIRGATUM, 'SHELTER'	5
BLACK EYED SUSAN	RUDEBECKIA HIRTA	4

COMMON NAME	SPECIES	PERCENT BY NUMBER OF SEEDS
BONESET	EUPATORIUM PERFOLIATUM	26.66
BLUE Vervain	VERBENA HASTATA	20.80
SMOOTH PANIC GRASS	PANICUM DICHOTOMIFLORUM	19.75
WRINKLED GOLDENROD	SOLIDAGO RUGOSA	8.89
JOE PYE WEED	EUPATORIUM MACULATUM	8.74
GRASS LEAF GOLDENROD	EUTHANIA GRAMINIFOLIA	6.65
PENNSYLVANIA SMARTWEED	POLYGOMUM PENNSYLVANICUM	4.59
NEW ENGLAND ASTER	ASTER NOVAE ANGLIAE	2.80
NODDING BEGGAR'S TICK	BIDENS CERNUA	0.79
SWAMP MILKWEED	ASCLEPIAS INCARNATA	0.21
BLUE FLAG	IRIS VERSICOLOR	0.12



HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

WALLIS AVENUE/SEMET TAR BEDS SITE
GEDDES, NEW YORK

SEMET SHORELINE ENHANCEMENT

SEN	03/13/09	-	03/13/09
DRAWN	DATE	CHK.	DATE
LOCATION	444843-L001		
	REV A		

FILE NAME: P:\HONEYWELL -SYR\444843 - CAUSEWAY DEMO\ENGR\CAD\HABITAT\444843.L001.DWG
PLOT DATE: 3/19/2009 3:46 PM PLOTTED BY: HALL, STEVE E

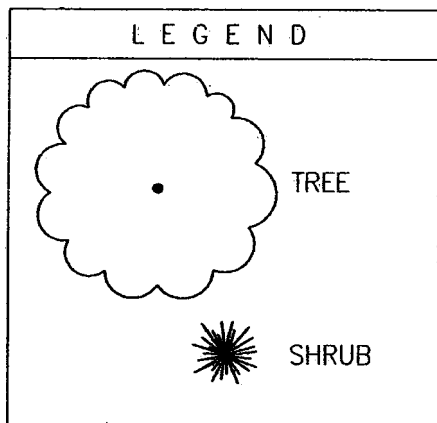
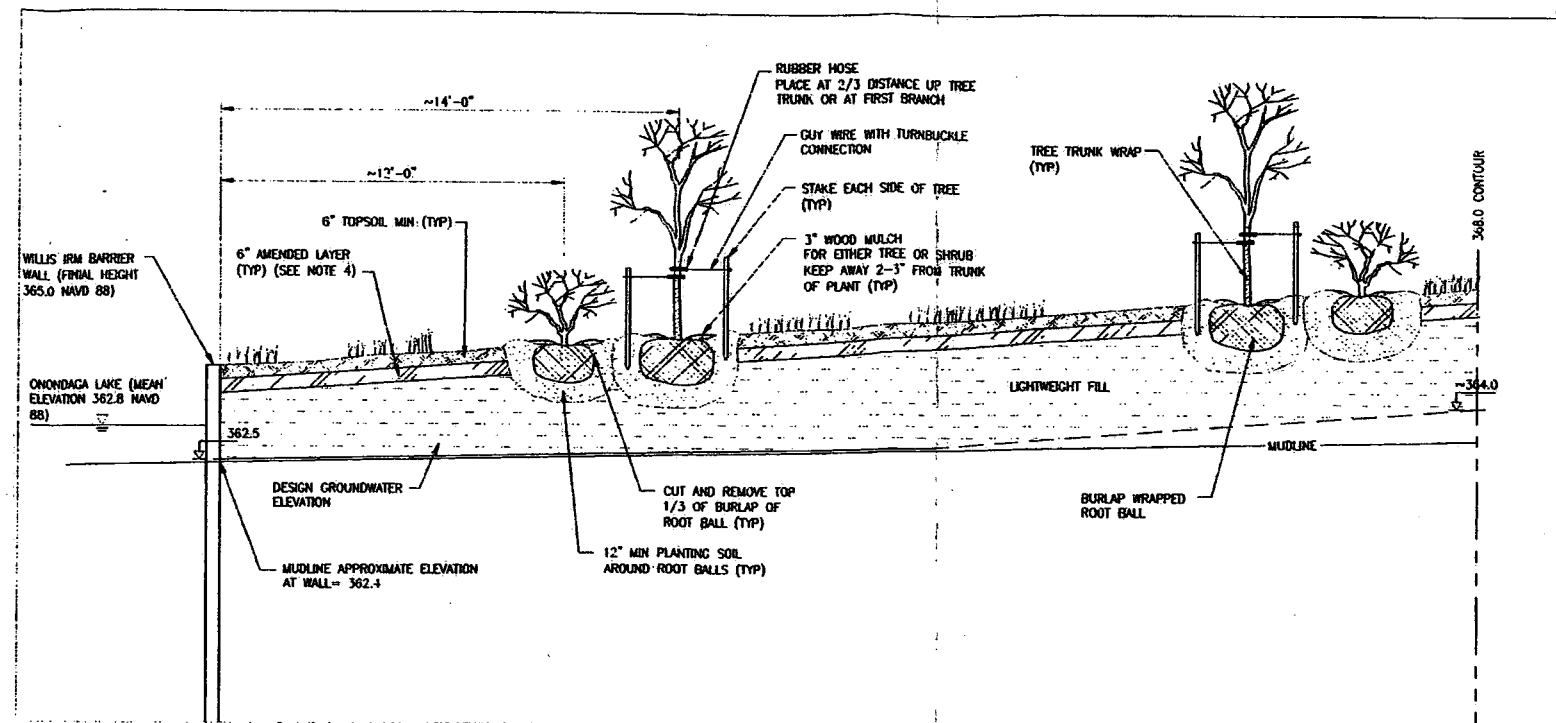
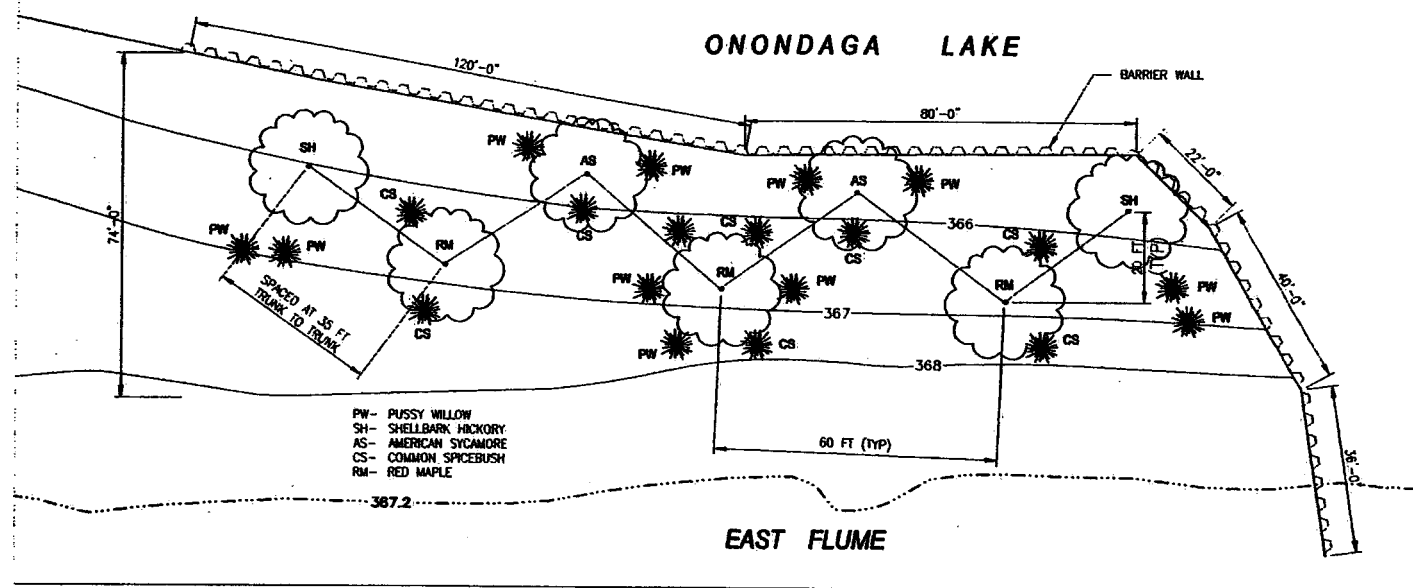


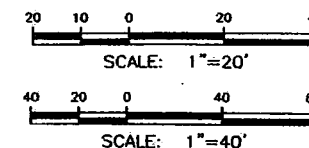
TABLE 1 UPLAND CONSERVATION SEED MIX		
COMMON NAME	SPECIES	PERCENT BY WGT
'NIAGARA' BIG BLUESTEM	ANDROPOGON GERARDII, 'NIAGARA'	25
CANADA WILD RYE	ELYMUS CANADENSIS	25
INDIANGRASS, PA ECOTYPE	SORGHASTRUM NUTANS, PA ECOTYPE	20
PARTRIDGE PEA	CHAMACRISTA FASCICULATA	10
SHOWY TICK TREFOIL	DESMODIUM CANADENSE	6
OX EYE SUNFLOWER	HELIOPSIS HELIANTHOIDES	5
'SHELTER' SWITCHGRASS	PANICUM VIRGATUM, 'SHELTER'	5
BLACK EYED SUSAN	RUDBECKIA HIRTA	4

NOTES:

- APPLY FERTILIZER IN ACCORDANCE TO MANUFACTURER'S SUGGESTED RATE. FERTILIZER TO CONTAIN A MINIMUM OF 18% NITROGEN, 24% PHOSPHORIC ACID, AND 6% POTASH.
- APPLY CONSERVATION SEED MIX IN TABLE 1 UNIFORMLY ON PREPARED SURFACES AT 1.1 LBS/ACRE. LIGHTLY RAKE OVER OR ROLL SEED INTO THE SURFACE.
- APPLY MULCH AT A UNIFORM RATE OF 1,500 LBS/ACRE. ANCHOR MULCH WITH TACKIFIER.
- AMEND EXISTING LIGHTWEIGHT FILL WITH MINIMUM 6 INCHES OF ORGANIC MATERIAL PRIOR TO PLACEMENT OF TOPSOIL. MECHANICALLY MIX ORGANIC MATERIAL WITH LIGHTWEIGHT FILL.
- TREE PLANTING DETAIL**
 - TREE PLANTING PIT TO CONTAIN MINIMUM OF 12" TOPSOIL AROUND ALL SIDES OF ROOT BALL FOLLOWING PLACEMENT.
 - CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL FOLLOWING PLACEMENT.
 - APPLY TRUNK WRAPPING UP TO FIRST BRANCH.
 - INSTALL STAKES ON OPPOSITE SIDES OF TREE EQUIPPED WITH GUYWIRE AND TURNBUCKLES. SECURE GUYWIRE TO TRUNK ABOVE FIRST BRANCH OR 2/3 THE DISTANCE UP THE TREE, WHICHEVER OCCURS FIRST.
 - THREAD GUYWIRE THROUGH RUBBER HOSES AROUND TREE TO AVOID CUTTING INTO TRUNK.
 - APPLY WOOD MULCH TO A MINIMUM DEPTH OF 3" AROUND BASE OF TRUNK, BUT NOT TOUCHING THE TRUNK SO AS TO NOT PROMOTE ROTTING OF BASE.
 - TREES SHALL HAVE A MAXIMUM DIAMETER OF 3 INCHES.
- SHRUB PLANTING DETAIL**
 - SHRUB PLANTING PIT TO CONTAIN MINIMUM OF 12" TOPSOIL AROUND ALL SIDES OF ROOT BALL FOLLOWING PLACEMENT.
 - CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL FOLLOWING PLACEMENT.
 - APPLY WOOD MULCH TO A MINIMUM DEPTH OF 2" AROUND BASE OF WOOD STEMS.

DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL



PRELIMINARY NOT FOR
CONSTRUCTION OR BIDDING FOR
DISCUSSION PURPOSES ONLY

PARSONS
290 ELWOOD DRIVE ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE 315-461-9500

WILLIS AVENUE/SEMET TAYLOR BEDS SITE
GEODES, NEW YORK
DESIGN SECTION 4
PLANTING PLAN

Honeywell
EVS ENGINEERING DEPARTMENT
101 COLUMBIA RD., BOX 2105
MORRISTOWN, NJ 07960

JOB NO. 444843
CONTRACTOR'S JOB NO.
SCALE AS SHOWN
DATE: 03/12/09
DATE: 03/12/09
444843-L002
REV: A

NOTICE
THIS DRAWING, THE PROPERTY OF HONEYWELL, IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	OWG. NO.	APPROVALS	DATE
A	ISSUE FOR REVIEW	SEH	-	-	-	-	-	-											

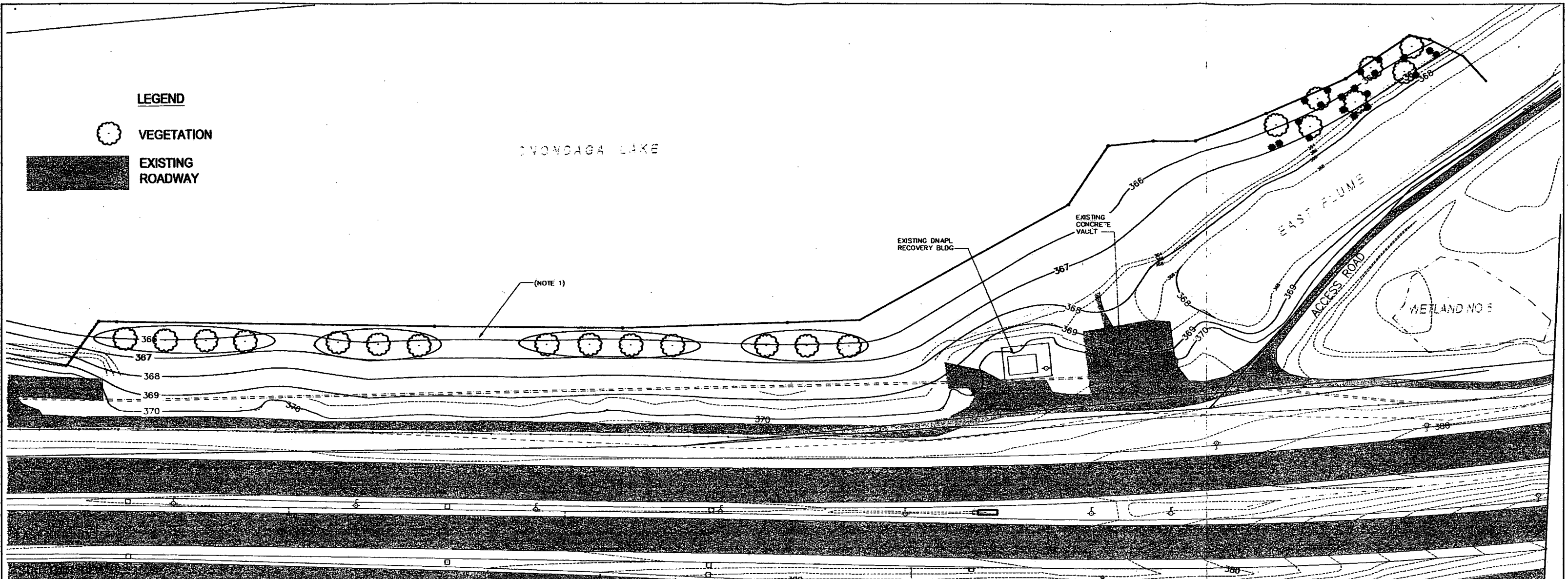
LEGEND



VEGETATION



**EXISTING
ROADWAY**



NOTES:

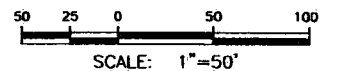
1. APPLY FERTILIZER IN ACCORDANCE TO MANUFACTURER'S SUGGESTED RATE. FERTILIZER TO CONTAIN A MINIMUM OF 18% NITROGEN, 24% PHOSPHORIC ACID, AND 6% POTASH.
2. APPLY CONSERVATION SEED MIX UNIFORMLY ON PREPARED SURFACES AT RATES SPECIFIED IN TABLE 1. LIGHTLY RAKE OVER OR ROLL SEED INTO THE SURFACE.
3. APPLY MULCH AT A UNIFORM RATE OF 1,500 LBS/ACRE. ANCHOR MULCH WITH TACKIFIER.

TABLE 1
CONSERVATION SEED MIX

COMMON NAME	SPECIES	POUNDS PER ACRE
WHITE CLOVER	TRIFOLIUM REPENS	.5
LANCER PERENNIAL PEA	LATHYRUS LATIFOLIUS	5
PERENNIAL RYEGRASS	LOLIUM PERENNE	10
TIMOTHY GRASS	PHLEUM PRATENSE	10
ORCHARD GRASS	DACTYLUS GLOMERATA	10
SMOOTH BROMEGRASS	BROMUS INTERMIS	10

CONCEPTUAL RESTORATION PLAN

SCALE: 1" = 50'-0"



HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS

200 ELWOOD DRMS RD, SUITE 312, LANSFORD, N.Y. 13080, PHONE: 315-651-6340

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

**WILLIS AVE SITE
CONCEPTUAL RESTORATION PLAN**

Honeywell

JHG	5/20/08	-	5/20/08
NAME	DATE	DO	DATE

444287-L003

A

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL, IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY REVEAL OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.		REVISION					BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.		REVISION					BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE		DWG. NO.		APPROVALS		DATE		JOB NO. 444287		WILLIS AVENUE/SEMET TWP BEDS SITE SYRACUSE, NEW YORK WILLIS AVE SITE CONCEPTUAL RESTORATION PLAN				
A		30% REVIEW					JHG	-																								CONTRACTOR'S JOB		AS SHOWN						Honeywell ENVIRONMENTAL DEPARTMENT 101 COLLEGE PARK DRIVE SYRACUSE, NY 13208
																									</															

FILE NAME: P:\MONEYWE.L -SYR\444287 WILLIS AVENUE WALL\10 TECHNICAL CATEGORIES\10.0 CAD\HABITAT\444287C004.DWG

ATTACHMENT B

TABLES

Table B-1
Conservation Seed Mix for Upland Areas

Species	Percent by Weight
'Niagara' Big Bluestem (<i>Andropogon gerardii</i> , 'Niagara')	25
Canada Wild Rye (<i>Elymus canadensis</i>)	25
Indiangrass, PA Ecotype (<i>Sorghastrum nutans</i> , PA Ecotype)	20
Partridge Pea (<i>Chamaecrista fasciculata</i>)	10
Showy Tick Trefoil (<i>Desmodium canadense</i>)	6
Ox Eye Sunflower (<i>Heliopsis helianthoides</i>)	5
'Shelter' Switchgrass (<i>Panicum virgatum</i> , 'Shelter')	5
Black Eyed Susan (<i>Rudbeckia hirta</i>)	4

Table B-2
Conservation Seed Mix for Wetland Areas

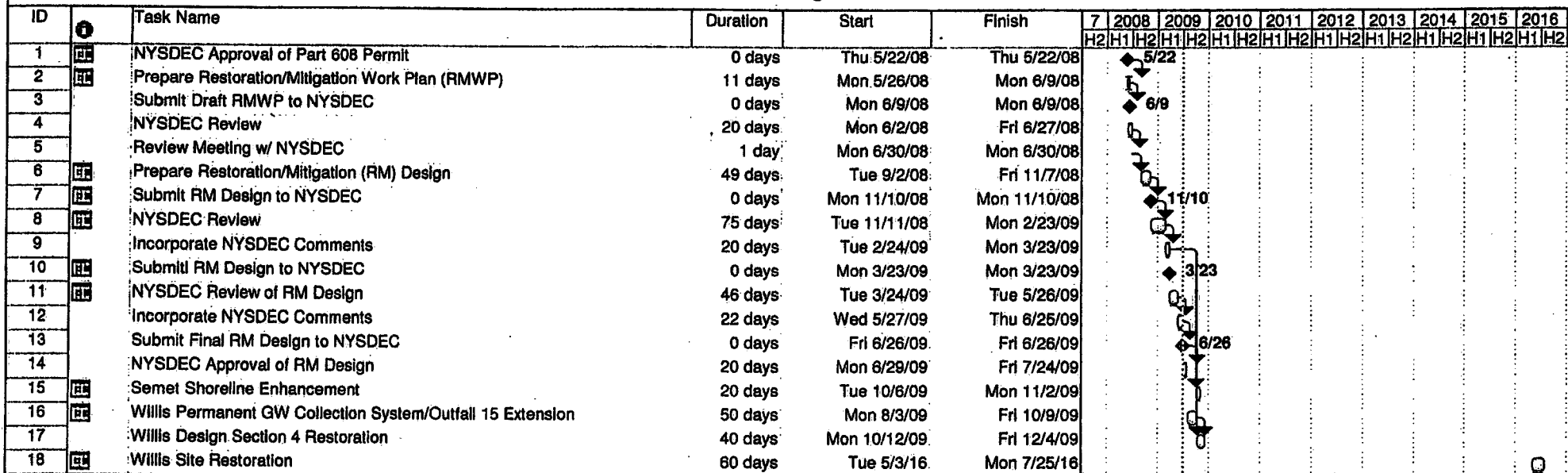
Species	Percent by Number of Seeds
Boneset (<i>Eupatorium perfoliatum</i>)	26.66
Blue Vervain (<i>Verbena hastata</i>)	20.80
Smooth Panic Grass (<i>Panicum dichotomiflorum</i>)	19.75
Wrinkled Goldenrod (<i>Solidago rugosa</i>)	8.89
Joe Pye Weed (<i>Eupatorium maculatum</i>)	8.74
Grass Leaf Goldenrod (<i>Euthamia graminifolia</i>)	6.65
Pennsylvania Smartweed (<i>Polygonum pennsylvanicum</i>)	4.59
New England Aster (<i>Aster novae angliae</i>)	2.80
Nodding Beggar's Tick (<i>Bidens cernua</i>)	0.79
Swamp Milkweed (<i>Asclepias incarnata</i>)	0.21
Blue Flag (<i>Iris versicolor</i>)	0.12

Table B-3
Tree & Shrub Species

Tree Species	Shrub Species
1. Eastern cottonwood (<i>Populus deltoids</i>)	1. Silky dogwood (<i>Cornus amomum</i>)
2. Shellbark Hickory (<i>Carya laciniosa</i>)	2. Redosier dogwood (<i>Cornus sericea</i>)
3. Black willow (<i>Salix nigra</i>)	3. Gray dogwood (<i>Cornus racemosa</i>)
4. Boxelder (<i>Acer negundo</i>)	4. Pussy willow (<i>Salix discolor</i>)
5. Silver maple (<i>Acer saccharinum</i>)	5. Witch hazel (<i>Hamamelis virginiana</i>)
6. Red maple (<i>Acer rubrum</i>)	6. Common spicebush (<i>Lindera benzoin</i>)
7. American Sycamore (<i>Plantanus occidentalis</i>)	7. Canadian serviceberry (<i>Amelanchier Canadensis</i>)
8. Pin oak (<i>Quercus palustris</i>)	8. Speckled Alder (<i>Alnus rugosa</i>)
9. Swamp White Oak (<i>Quercus bicolor</i>)	9. Black Chokeberry (<i>Aronia melanocarpa</i>)
10. Bur Oak (<i>Quercus macrocarpa</i>)	10. Buttonbush (<i>Cephalanthus occidentalis</i>)
11. Blackgum (<i>Nyssa sylvatica</i>)	11. Winterberry (<i>Ilex verticillata</i>)
12. Northern White Cedar (<i>Thuja occidentalis</i>)	12. Northern Bayberry (<i>Myrica pensylvanica</i>)
	13. Shining Willow (<i>Salix lucida</i>)
	14. Meadowsweet (<i>Spiraea alba/latifolia</i>)
	15. Witherod (<i>Viburnum cassinoides</i>)

ATTACHMENT C
SCHEDULE

**Figure C-1
Willis Restoration/Mitigation Schedule**



Project: Willis RM
Date: Wed 6/24/09

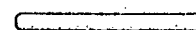
Task



Milestone



External Tasks



Split



Summary



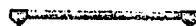
External MileTask



Progress



Project Summary



Split



ATTACHMENT D
RESPONSE TO NYSDEC COMMENTS

RESPONSES TO NYSDEC COMMENTS ON THE RESTORATION/MITIGATION DESIGN FOR THE WILLIS AVE./SEMET TAR BEDS SITES

(Responses in Bold)

General Comments:

1. **Section 3 – Upland Habitat Design: Design Section 4, page 3, 1st paragraph** – This section states that “The wall will remain at this elevation until the completion of the dredging operations outboard of the barrier wall”. For this section of the wall, Design Section 4, the final wall height should be incorporated into this design and should be attained as part of this work effort.

Response: The design has been revised to include cutting the sheet piling down to elevation 365.0 ft in design section 4.

2. **Section 3 – Upland Habitat Design: Design Section 4, page 3, last paragraph** – The amendment of the top 6 inches of the aggregate with organic material, along with the addition of 6 inches of topsoil, is acceptable, however, if plantings and seeding do not take, additional topsoil, along with additional plantings and seeding may be necessary.

Response: Noted.

3. **Section 4 – Conceptual Upland Habitat Design: Causeway Area, page 4, last 2 bullets** – These bullets should be revised, or text added to the section, to state that the substrate placed for plant growth will be consistent with the Design Section 4 restoration. The bullets should also be revised to indicate that this area will be consistent to Design Section 4 with respect to the growth requirements of the target species for restoration. This comment assumes that the restoration of Design Section 4 is successful, and may be a model for the Causeway Area. If the restoration of Design Section 4 is not successful, the restoration design for the Causeway Area may require modification prior to implementation.

Response: Section 4 of the design has been revised to more clearly state that the growing medium to be established in the Causeway Area at this point in the restoration process (design phase) is consistent with the approach for Design Section 4. In addition, text has been added to indicate that the growing medium is subject to change based on observations and lessons learned from implementation in Design Section 4.

4. **Section 6 – Monitoring and Maintenance, page 5** – The qualitative vegetation assessment should include an assessment of percent (%) plant cover.

Response: The design has been revised to include an assessment of percent (%) plant cover for the conservation and wetland seed mix species.

PARSONS

5. Section 6 – Monitoring and Maintenance, page 5 – This section does not appear to capture enough of the elements of the maintenance requirements from the LCP Bridge Street monitoring plan. The following elements should be added or changed:

- Replacement of failed vegetation should occur for the entire 5-year monitoring period. If there are multiple failures of the same species, a new species should be proposed to NYSDEC for replacement. The replacement of vegetation should include all planted elements including the herbaceous species and willow whips. As with the Bridge Street plan, volunteers can be included in assessment of vegetation success after the 2nd year;
- Reseeding of areas with poor or no percent (%) cover should be added; and
- Mowing should be avoided in the vegetation establishment area. It is understood that the seed mixture proposed is a low maintenance mix to minimize the need for mowing. However, the interim cover crop would likely require one round of mowing during the 1st Spring season so that the interim cover crop does not shade out the permanent species. Text should be added to the revised design in order to address the above bullet.

Response: The design has been revised to include the following:

- The annual goal for percent cover is 85% following the second full growing season for the conservation and wetland seed mix species. If total percent cover falls below 85%, select areas will be re-seeded.
 - In terms of the tree (including willow) and shrub species, the text will be modified to include maintaining approximately 85% of the species for a five year period. If a single species makes up a substantial portion of the failed vegetation, a new species will be selected from Table B-3.
 - As indicated in Section 6 – Maintenance, an initial mowing of the cover crop is anticipated. The O&M contractor for the project site will be notified following planting to avoid mowing restored areas.
6. Attachment C – Schedule – The schedule should be revised as needed for the revised document.

Response: The document has been revised accordingly.

PARSONS